Space Weather Forecast

Issued on Tuesday, 18 October 2022 at 01:12 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: No significant activity.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours, with a long period flare peaking at 17/1713 UTC from a region in the southwest of the disc. This is the largest and most complex group, although it is a relatively small and magnetically straightforward region at present. There are currently four numbered regions on the visible disc, with all of these presenting as small and simple bipolar regions. Other numbered groups showed either little change or minor growth.
There remain numerous filaments (arcs of solar material held above the Sun's surface by its magnetic field) on the facing side of the Sun at present, although none obviously lifted off during this period. A Coronal Mass Ejection (CME) from the long period flare is undergoing assessment but is unlikely to be Earth directed. No Earth directed CMEs were in evidence on available satellite imagery at the time of writing.

Solar Wind / Geomagnetic Activity: The solar wind showed an ongoing but waning connection to the fast wind of a coronal hole. The wind speed declined very slightly from around 580 km/s to near 540 km/s. The Interplanetary Magnetic Field was weak, with the north-south component also varying weakly. Geomagnetic activity was Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Low, barring any significant sunspot development.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs in the current forecast, however a minor glancing blow is possible early on Day 1 (18 Oct), although no significant impacts are anticipated. Earth is currently in a waning fast wind from a coronal hole, with wind speeds declining near to background levels by Day 3 (20 Oct). A second coronal hole may give slightly elevated wind speeds either later on Day 3, or more likely on Day 4 (21 Oct). Geomagnetic activity is expected to be Quiet to Unsettled, perhaps with Active intervals on Day 1 if we see any CME influence, and again on Days 3 or 4 as the next coronal hole fast wind arrives.

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	1	5	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	2	2	1
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	2	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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